

AMERICAN VETERINARY REVIEW,

JUNE, 1881.

ORIGINAL ARTICLES.

THE HORSE'S FOOT.

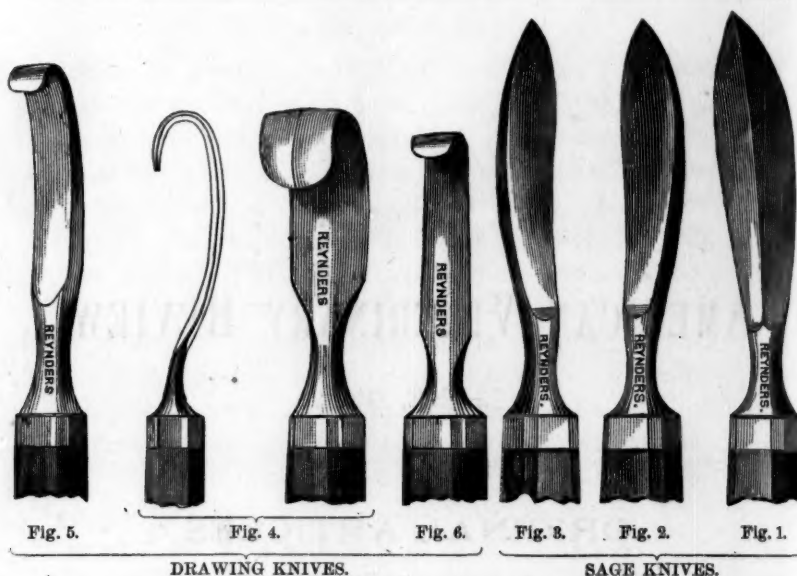
BY A. ZUNDEL.

(Continued from page 45.)

The surgery of the foot requires special instruments for the operations which influence action upon the hoof, as also for those which are to be performed upon the tissues of the foot proper.

Besides those which are commonly required in ordinary surgery, such as curved scissors, probes, bistouries and forceps, others are needed of special forms and for special purposes; amongst those most commonly used are the different sage knives and drawing knives.

Sage knives are lanceolated blades secured to handles, and are either double or right or left. The blade, which is curved upon its long axis, may be sharp on both edges, as in the double, (fig. 1) or on only one or other edge, when it is known as a right (fig. 2) or left (fig. 3) sage knife, being thus adapted to use by either the right or the left hand.



Drawing knives, which are made somewhat like those used by blacksmiths in the ordinary method of paring the foot, yet differ from those in being straighter in their attachment to the handle, and also on being curved on their long axis, being also sharp on both edges. The groove of the instrument is made to vary in width, and thus can be used as the different steps of the operation may require (fig. 4). Sometimes the drawing knife resembles more that of the blacksmith, as being sharp on one edge only, (fig. 5) and in this case the groove of the blade is generally much narrower than in the others. Some special operations require peculiar forms of drawing knives; for instance, those which are made with a blade perfectly straight and narrow, very slightly sharp on the edges, but having a very narrow groove at the extremity (fig. 6). These are used principally in the scraping of diseased bone-structure, in deep punctured wounds of the foot, and in cartilaginous quittor, when small sections of cartilage are to be removed from the lateral borders of the os pedis, which could not otherwise be accomplished.

Other instruments are also required, the description of which will find its place as we refer to the different diseases where they find their applications.

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GENERAL OPERATIONS.

Removal of the sole (Germ., Absohlen).—This is an operation by which the sole of the foot is removed by severing it from the living tissues underneath. In times gone by this operation was extensively performed, being considered indispensable as soon as the slightest lesion under the sole existed. It was alleged that unless this was done the suppuration would be likely to spread underneath the horn. In our days, it is rarely performed, as it is considered that it presents but little advantage, so far, at least, as it involves the removal of the entire organ. Sometimes, however, portions of it have to be taken off, as in some special diseased conditions of the foot, such as in punctured wound, pricking by the blacksmith, burnt sole, etc., the *modus operandi* of which will be considered when treating of these diseases.

Removal of portion of the wall.—A few morbid conditions of some parts of the foot require in their treatment the removal of a portion of the wall, in order that the escape of pus, the removal of diseased tissue, or the sloughing of necrosed cartilaginous or bony structure, as in complicated cases of suppurative corns, of quarter crack or in cartilaginous quittor. A similar operation is sometimes required in cases of toe-crack complicated with disease of the os pedis.

These will be further considered when treating of these special subjects.

DRESSINGS.

As nearly every operation of the foot requires a mode of dressing peculiar to the manipulations which have been necessary, we shall, when speaking of the different diseases, where parts of the walls have been removed, include also a description of the peculiar dressing they require.

There is one, however, which is much thought of in veterinary surgery, and of what we will have to say more when speaking of punctured wounds of the foot. This is the dressing with plates, which serve to retain the plantar surface, the balls and pads of oakum, which are placed to protect the wound. The application of these plates is far superior to the leather sole,

because of its easy removal when the parts are being examined, and of their easy replacement; thus allowing the surgeon to change the dressing whenever he sees fit, without being obliged to remove the shoe.

DISEASES.

Canker of foot (Germ. Strahlkrebs, Hufkrebs).—Under this somewhat unscientific, though accepted name, is designated a peculiar disease of the feet of solipeds, seated in the secreting tissues of the horny box, always beginning at the frog, and characterized by alteration of the horny secretion. Names of a more scientific meaning have frequently been proposed, such as *gnawing ulcer* (Bourgelat), *schirrus* or *cancerous carcinoma of the frog*, *carcinoma of the reticular tissue of the foot* (Vatel), *dartre of the plantar cushion*, *chronic podoparenchydermitis* (Mercier), and *epithelioma of the frog* (Fuchs). None of these has ever been accepted, and the old hippiatric name has been retained.

History.—It is conceded that the old veterinarians were acquainted with canker, and Vegetius evidently speaks of it, but not until the time of Solleysel do we find a description somewhat complete of the disease and its treatment; Garsault, La Gueriniere, Weyrother and others spoke of it, and have expressed various opinions as to its etiology, and especially as to its treatment. So little progress was discernible in the writings of Bourgelat, Chabert, Huzar and Girard, on that very question, and so many false ideas were admitted, that Chabert in despair has called canker the *opprobrium* of veterinary medicine.

It is but recently that serious researches as to the nature of the disease have thrown some light on the question, and established the important fact that its seat is not in the disorganized horn, but in the secreting organs, and that there is an alteration in the products of this secretion; that it is consequently to these that remedies must be applied.

We might refer to the writings of Jeannié, Crepin, Hurtrel, D'Arboval, Prevost, Mercier, Plasse, Percivall, Dietrichs, Eichbaum, Wells, H. Bouley, Reynal, Haubner, Fuchs, Rey, Megnin, etc., each of whom has furnished his contingent, while still the intimate nature of the disease remains but imperfectly known, and

there is but little certainty either in the treatment or its results.

Let us observe, however, that in our days, canker has become comparatively a rare disease, especially in cities, which, doubtless, is because of the cleanliness of the streets. In the beginning of this century, canker and grease—closely related diseases—were frequent in Paris; then horses were obliged to travel through deep gutters of mud, while to-day these affections are exceptional occurrences (H. Bouley). The same thing has been observed by Percival in England. When hygienic precautions were not as well understood as they are to-day, in establishments employing large numbers of horses, when the stables of mail and stage coaches, and even those of military garrisons, were small, ill-ventilated and dirty, among horses standing in filth and soiled manure, these affections were relatively common; with hygienic improvements, they have almost disappeared. In the army, canker was the cause of considerable annual losses, almost as serious as those from glanders; to-day it is rare and almost unknown.

Improvements in the different breeds of horses, either by better choice of reproducers, or by changes in the mode of feeding, resulting from the progress of agricultural processes, the suppression of common pastures, etc., etc., have contributed to render the disease less common.

(To be continued.)

RETENTIO SECUNDINARUM IN THE COW.

BY DR. N. H. PAAREN.

In cattle practice, the veterinarian is not unfrequently called upon to attend to irregularities in the expulsion of the afterbirth. Depending upon the cause of the retention, its removal may be effected with or without manual assistance. In our own practice we have found, that in almost two-thirds of the cases, the removal of the afterbirth was effected by internal treatment alone.

Ordinarily, soon after the cow has calved, the so-called after-

pains begin, and, under normal conditions, the afterbirth is expelled in the course of the first twenty-four hours; otherwise it is often the case that it will not be discharged without assistance. Various circumstances may cause its retention; either disturbances in the function of the uterus, a faulty condition of the secundines themselves, or abnormal connections of these with the uterus.

The uterus, whose muscular fibres during gestation have become considerably extended, already begins to contract actively with the advent of the labor pains, and this, together with simultaneous contractions of the abdominal muscles, causes the opening of the *os uteri*, the escape of the liquor amnii, and the birth of the calf. As the empty uterus is then no longer influenced by the abdominal muscles, the expulsion of the afterbirth is effected alone by the uterine contractions; but various irregularities may prevent its expulsion. Among these may be mentioned, a poor and anæmic condition of the cow; beginning calving fever; advanced age; and protracted and difficult labor—under which circumstances the normal contractions of the uterus do not occur, or at least are not sufficiently effective.

When the calf leaves the uterus, a powerful stimulus to its action is removed; and this stimulus the afterbirth is quite inadequate to supply. If the uterus, from the causes just mentioned above, fails in discharging the afterbirth, it becomes accustomed as it were, to its presence, and it no longer acts as a stimulus, but it remains with the uterus imperfectly contracted around it. Gradually, the uterus, in a soft and flabby condition, descends beneath the brim of the pelvis, in a position considerably lower than the vagina and external genital parts. The moisture from the afterbirth, which latter is now a foreign body, and mucous secreted from the mucous membrane of the uterus, tend to soften the walls of the latter, often rendering them considerably tender. Thus the afterbirth is retained until it is removed by artificial means, or by its own weight, aided by a recumbent position of the cow, slides out through the yet open *os*, after being detached from the cotyledons by decomposition. Of course, the more the uterus and the abdominal walls have been expanded during gestation,

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the more readily follows a condition of inertia and flabbiness of the uterus, and therefore, retention of the afterbirth is very frequent in cases of twin births and by old, lean, poverty-stricken and hollow-backed cows.

Want of contractile power in the uterus can also be dependent upon, or a consequence of morbid conditions. Thus adhesion may have taken place during gestation between the cornu of the womb and the abdominal walls, by which retroflexion or return of the cornu to its normal position is prevented. Such adhesion may be suspected when, on examination soon after delivery, the cornu of the uterus is found to be remarkably long, and when it cannot, as under normal conditions, be drawn towards the vagina, by pulling in the afterbirth.

The afterbirth may also be retained in consequence of a too rapid contraction of the os uteri, while the uterus itself remains inert and flaccid. Likewise, retention may be due to a too rapid retroflexion of the uterus; for we often find by detaching the afterbirth from its natural adhesions, that it adheres most tightly in the flexed cornu (most frequently the right cornu), and that it requires forcible bending of the hand and wrist to effect its detachment. Another cause of retention is a too firm connection between the afterbirth and the cotyledons. This condition is not unfrequently met with in the cow. It is very common in cases of abortion that the afterbirth, despite the powerful and repeated straining of the cow, is not expelled, because the adhesions have not been loosened by the expulsion of the unripe fruit, and as a rule it does not loosen before decomposition takes place. Even in cases where eversion of the uterus has taken place after normal calving, it is often found impossible to detach the placentulæ from the cotyledons. A too firm connection between the afterbirth and the uterus, besides being ascertained while attempting its removal, may be suspected from the strong but ineffectual afterpains of the cow. By inserting the hand in the uterus in such a case, the powerful contractions almost paralyze the hand and render manipulation impossible.

The importance which the retention of the afterbirth has, as regards the life of the animal and its economical usefulness, varies

considerably. If the general condition and state of health of the animal is good, if there is no straining, and if a considerable portion of the afterbirth is visible externally, there is generally no danger. The more of the afterbirth that protrudes soon after delivery, the greater is the probability that it will readily depart, and *vice versa*. But, should the animal lose its appetite and become drowsy; should diarrhoea and severe straining ensue; if the external parts become swollen, red and ulcerated, and the afterbirth decomposes, the condition of the animal must be regarded as precarious.

The qualitative condition of the secundines may vary, and this circumstance seems not to be without influence upon the retention and its consequences. Thus it is sometimes found to be tough, strong and leathery, a condition which long resists decomposition; so that, even after the lapse of eight days, it may yet be found comparatively fresh, in which case its retention does not seem to inconvenience the cow. In other cases it is found to be rather flabby, of loose texture, slimy, blue-colored from overfilling with blood, very tender and easily torn, soon decomposing, and thus in a high degree possessing the conditions favorable for the development of pyæmia. It seems, furthermore, that the danger from retention of the afterbirth to some extent may be enhanced by accidentally prevailing diseases, and especially during the prevalence of typhoid or putrid diseases among cattle.

From what we have said about some of the causes of retention of the afterbirth, it will be apparent that treatment in every case must vary considerably. Where the cow is quiet, the general health undisturbed, and the nearest cause of retention may be looked upon as due to relaxation or want of contractibility, the use of savin or ergot is indicated. The dose of ergot is from two drachms to half an ounce, given two or three times daily, together with juniper berries, calamus root, &c. *Herbæ sabinae* may be given either in the form of infusion, an ounce to twenty-four ounces of water, at one dose; or, in the form of powder, from one-half to one ounce, two or three times daily, either alone or together with aromatics. If the cow strains so much as to make it probable that a too close adhesion exists between the parts, the

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use of half ounce doses of carbonate of potassium, together with slimy fluids, such as flaxseed or hempseed tea, will be indicated. However, in practice, we will often find cases, for instance, in fat and strong cows, where it will be proper to combine carbonate of potassium with savin or juniper berries, for the purpose of at once effecting detachment of the membranes and expulsive contractions of the uterus. Provided that the general condition of the cow remains unimpaired, these remedies may be continued during six to eight days. Should, however, loss of appetite and diarrhoea set in, the use of savin must be discontinued.

If, in spite of internal treatment, the afterbirth should be retained, it will be proper, after a week's time, to attempt its removal. This may be effected either by winding it off by means of one or two sticks, or by inserting the hand into the uterus and detaching the adhesions with the fingers. If, on account of a tender or friable condition of the membranes, the winding process does not succeed, and it is allowed to remain until it passes off in a decomposed condition, the floor of the stall should be arranged to make the cow stand much lower with the hinder parts; and with a view of abating the fetid odor and to wash out detached portions of membrane, it will be proper to use frequent injections of a weak solution of chloride of lime, which should be made with bloodwarm water and used immediately.

The removal of the afterbirth is indicated in cases where the cow strains violently after calving, so that eversion of the uterus may be feared; furthermore, when the usual remedies have been employed without effect; and, lastly, when the general condition of the animal is disturbed, and we have reason to fear the appearance of inflammation and absorption of decomposed matter. As already mentioned, the removal may be effected by winding it off. This process generally proves successful when the membranes are strong, which they generally are in cases of abortion, or when several placentalæ already have made their appearance externally, and this method is both the most convenient for the operator and the least dangerous to the cow. While engaged in the winding, the afterbirth should not be otherwise pulled in, and the winding should proceed by turning the stick in an upward and forward di-

rection. Should the membranes part, it is best to wait a few days, when they may be found loosened. As there nearly always is more or less of putrescent fluid accumulating within the uterus, of which a portion is expelled with the membranes, it is proper, with a view of furthering its escape, to arrange the stall so that the cow may lie lower with the hinder parts.

The other method of removing the afterbirth consists in detachment of its adhesions by aid of the hand inserted into the uterus. While that portion of the membranes which extends outwardly is taken hold of by one hand, the other hand is inserted between the membranes and the wall of the vagina, and passed through the os uteri as far forward as may be necessary. The placentalæ are then sought for and each one carefully separated from its attachment with the cotyledons of the uterus. In some cases the operator may thus succeed in removing the placental sac entire and without rupturing it. To succeed in removing the secundines, the os uteri must yet be in a relaxed and open state. It is known that its closure generally takes place about twenty-four hours after calving, but when a large portion of the secundines protrude through the same, it will be found possible after six to eight days, with proper care, to penetrate it with the hand. The application of great force on the walls of the os uterus, after it has closed, should be avoided, as such force may result in rupturing the organ. Such rupture is not always dangerous, but cases have occurred where the contact of putrid matter with fresh wounds have been the cause of dangerous metritis. Should it appear that the placentalæ adhere too tightly to the cotyledons, it will be best to desist from any effort at removal of the secundines for the present, for not only will a continued effort at removal result in tearing the membranes, but only a portion may be removed and the rest remain to decompose. The irritation caused by such forcible attempts is very apt to result in dangerous inflammation of the uterus.

The consequences of removal of the secundines by the hand can never be anticipated or foreseen. Thus, in cases where we have occupied several hours in detaching the membranes by the hand, and where the cow before and after the removal of these

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had strained violently, an easy recovery soon followed, while other cases, where the detachment was very easily and completely effected, have resulted in severe metritis.

When only the ends of the arteries of the umbilicus protrude through the vulva, and the cow otherwise is quiet and well, it is best to limit the treatment to internal remedies, and when these do not prove effective in the course of eight days, the removal of the membranes may be attempted by the winding process or by the insertion of the hand.

In connection with this subject, it may be stated that the removal of the afterbirth will require the assistance of two men, one to hold the head of the cow and the other to hold the tail aside and upwards. The removal of the afterbirth is not without some danger to the operator. The continued contact with putrescent matter is apt to produce severe erysipelatous inflammation, the formation of abscesses, enlargement of the lymphatic glands at the armpit, fever, herpes zoster, &c. From the latter painful affection the writer has suffered twice, each case being traceable only to putrescent infection, after removal of decaying afterbirth in one case, and after the removal of a dead and decomposed calf in the other case. The danger of such infections may generally be obviated by precautionary measures. It is our custom to liberally anoint not only the hand and arm, but also the genital organs of the animal, with oil or hog's lard, the latter of which is generally always attainable. As both hands by turn will be required in detaching the afterbirth, it is our custom to wipe off the hand and arm first inserted and to repeat the anointing a second or third time, if their insertion is again required. When the operation has been concluded, the arms and hands should be thoroughly cleaned with soap and warm water. A person with wounds or sores on his hands or arms should not engage in the operation. As the performance of the operation requires partial undressing of the operator, he should avoid exposure to drafts of cold air in the stable. As a protection to the clothing, the use of an old rubber overcoat without sleeves has been found very desirable by the writer.

COMPLETE PROLAPSUS UTERI.

By J. C. MYERS, JR., M.D., V.S.

April 12th, 1881.—I was requested to repair to the country about four miles distant, to render obstetrical services to a cow.

On my arrival, instead of encountering a case of dystocia, as represented, I found the patient prostrate in the stable, with a dead calf lying behind her in a pool of blood, and the uterus inverted, with most of the placental attachments still adherent. My first act was to remove the foetus and coagulated blood.

I then placed the uterus upon a rubber buggy apron, cleansed it with warm water, and began to detach the placenta from the cotyledons, as much as possible, without inviting hemorrhage. These preparatory measures being accomplished, I, with the aid of an assistant, who supported the fundus of the uterus, proceeded to replace the misplaced organ, beginning at the cervical portion, and gradually engaging the body and then the fundus of the uterus, into the pelvic cavity, which readily dropped into the abdominal cavity. The cow made strenuous efforts to resist the operation, by frequent uterine contractions. Even after it was *in situ* she made repeated attempts to eject the organ, but the retention of my hand within the uterus prevented a secondary prolapsus until positive appliances could be adjusted to retain the unruly organ.

Not knowing the nature of the case before leaving my office, I was unprepared to meet the emergency, and was, therefore, obliged to have recourse to the best means at my command.

Before taking any steps in the operative procedure, I prepared a pessary out of a shovel handle, which acted admirably well, and it is this feature in the management of the case that prompted me to report it. The shovel handle measured from 50 to 60 cm. in length, rounded off at the cut extremity, and notched at various points for a distance of 5 cm. from said end. This serrated arrangement served to fasten by means of twine a bulb 8 to 10 cm. in diameter, made of old linen and cotton. The bulbous portion of this self-made pessary was introduced into the

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vagina, against the cervix uteri, taking the place of my hand, and the other extremity (the handle proper) was left protruding outside of the vulva, with its aperture (measuring 5 by 8 cm.) well exposed. Through this opening I passed a small board 40 cm. long and 8 cm. wide, the centre of it being secured to this extremity of the tool (if it can be so termed) with twine. The distal ends of this board extended from one ischial tuberosity to the other, respectively. Each was furnished with a small rope, which, after being drawn forward along the lateral walls of the thorax of the cow, was tied to the sides of a collar that had been placed around her neck for this purpose. By this method of attachment the pessary constantly retained its proper position. Restlessness or violent straining produced no distorting effect upon it. Another excellent property the pessary exemplified in this case is, that by it acting as a foreign body within the vagina and in the vicinity of the cervix uteri it gave rise to uterine contractions, thereby arresting the post partum hemorrhage, which was absolutely essential, as the cow had lost a great quantity of blood, causing her to collapse into a semi-comatose condition, from which she was afterwards lifted through the agency of alcoholic stimulants and eggs, and by the 15th inst. was apparently convalescent, when the pessary was removed. I must apologize for adopting so crude a method as this for retaining the uterus in position. If correct information as to the character of the case had been communicated to me by the messenger, I would have been provided with a pessary more elegant, but cannot say better for the occasion. Besides, the case being an urgent one, would not permit any delay by sending for it, and I was therefore forced to resort to this plebian method. I must, however, acknowledge that this ordinary tool is better adapted against inversion of the uterus than the instrument I had made to order, which is a pad pessary with a loop at its outer end, as described by Franck in his German veterinary obstetrical work; also by Fleming in his work on veterinary obstetrics, who in addition speaks of the transverse piece of wood, with an eyelet at each end and made to move up and down the handle by means of a screw, being sometimes substituted for the loop of cord. In my opinion it is at all times

preferable to the loop, as it not only serves to steady the pessary, but also produces a gentle pressure upon the vulva and ischial tuberosities, which materially assists in retaining the uterus.

A surcingle encircling the chest occurs to me as a better method to attach the said ropes to, especially if the surcingle is in turn secured to a collar to prevent it from slipping backwards.

GLANDERS IN THE SEVENTEENTH CENTURY.*

This equine disease is presented in two forms, the one known as the white or stone glanders—weisse sonsten stein-rotz genannt—which is curable in the early stages, and the other, which is called yellow and mixed with blood (these terms refer to the color or character of the nasal discharges) and which gives forth an evil odor, and is incurable.

The signs of the disease are:

1. When a horse having the disease is ridden hard and checked suddenly, it will appear as if suffocating for want of breath.
2. The material which flows from the nose sinks to the bottom of a vessel filled with water, if thrown into it.
3. The flow is constant.
4. If the flow is white and odorless it is "stein-rotz."
5. If yellow, reddish or mixed with blood, the case is incurable.
6. Such horses often let fall a rotten moisture—"faule Feuchtigkeit"—from the mouth.
7. When water is given them, a great mass of stuff is often to be seen discharged from the nose and mouth.
- 8 The ears and head droop.
9. Breathing is heavy.
10. Appetite is poor.
11. Cough, and are sucked up in flanks.
12. Have cold nostrils.

* From the *Hippieter Expertas* of Winter von Adlers Flugal, Nuremberg, 1678.

13. Are emaciated and lazy.
 14. The hair on the neck (mane) falls out easily.
 15. Such horses give off an offensive smell.
- This all comes to pass in three ways:
- 1st. The discharge comes from the brain.
 - 2d. The animal has chronic disease of the throat.
 - 3d. One horse can infect others.

That from the brain is due to a superfluous amount of moisture in that organ, which causes a corruption. This discharge is white and cold; if it is yellow the case is worse and incurable. Chronic pharyngitis also comes with the disease.

Treatment.—Bleed, but not too much, to be again repeated the following day.

Give:

℞ Myrrhæ j. 3.
 Aristolachiæ.
 Gentianæ ℥℥ ij 3
 Bacc. lauri.
 Eboris ℥℥ ss 3.
 Rad jalap.
 Fol. Saldonella ij 3.
 Agarii ss 3.
 Mellis iij 3
 Vini ij 3.

D. S.—Mix well together, and give the horse this dose each day for four consecutive days.

Care.—Such horses must be strictly separated from others, in a moderate temperature, and as the material which collects in the brain is of a cold nature, they must have warm and dispersing feed and drinks.

The daily drink of such horses should consist of:

℞. Herb. centaurii. (3 hands full.)
 Garlicks.
 Ginger ℥℥ iij 3.
 Nasturcian ends ij 3.
 Flag-root iv 3.
 Licorice iij 3.

Agaricum ij ʒ.

Turbith, j ʒ.

R. Sambuci j ʒ.

Mellis ix ʒ.

D. S.—To be steeped in hot water, strained, and given cool to horse to drink.

AN EPIDEMIC OF TRICHINOSIS ON THE JORDAN.*

BY DR. JOHN WORTALUT.

The outbreak of the disease was traced to a wild hog killed in the swamps adjoining the village of El Khiam, on the 25th of November, 1880. The animal was a very large boar, and I was told that its flesh appeared fresh, fat and perfectly healthy.

A large number of the people of the village ate of the flesh of this hog, partly in a raw and partly in a semi-cooked condition. Not one of these persons escaped invasion. The head of the boar was sent as a present to a family in an adjoining village. It was cooked three times before any of it was eaten, and although quite a number of people ate of it, none of them became sick. All those who partook of other portions of the hog remained apparently healthy until the second, in some, and in others, the third week subsequently. I heard of only one man who was taken with vomiting and diarrhoea soon after eating; in this case the phenomena of the disease were very mild. Another ate the meat well cooked, and remained free from any indications of infection to the end of the fifth week after partaking of it. This person was not confined to the bed.

The principal phenomena which became apparent during the third, fourth and fifth week of the invasion were, œdema of the face and extremities, severe muscular pains, more or less fever and itching over the whole body. The pains complicated the active muscles, inclusive of those of the lower jaw, larynx and pharynx; but were most severe at those points where the muscles

* Virchow's Archiv, vol. 83, p. 553.

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lost themselves in their tendons upon the extremities. The fever only assumed an exacerbated type in fatal cases. Children suffered less than those of mature years. Some cases of relapse were apparent.

The number of persons diseased, were: Men, 124; women, 103; children, 35—total, 262. Ending fatally: Men, 3; women, 3—total, 6.

This is the first case of the kind reported from the Orient, and is also of value as indicating that the wild swine of this region are the subjects of trichinosis, as well as those of Europe.

"B."

EDITORIAL.

LEGISLATIVE APPROPRIATION FOR PROTECTION AGAINST PLEURO-PNEUMONIA.

Another appropriation has been granted by the Legislature of New York in support of measures against the spread of contagious pleuro-pneumonia.

That the act by which the labors of the Cattle Commission, which existed some months ago, were suspended, was a very unfortunate and short-sighted one, will be easily demonstrated, when the new Commission shall enter upon its labors. When General Patrick found his funds cut short, the Commission had nearly acquired control of the disease, and it was but a question of time and a few thousand dollars for New York to emulate Massachusetts in her exemption from the bovine lung-plague.

It will probably not be very difficult now for the new Chief Veterinary Inspector to manage the disease, since it is probable that the different infected districts are pretty well identified and known. And it certainly must be so if the Veterinary Inspector appointed by the Commissioner of Agriculture of the General Government has fully performed his duty.

We have no doubt, however, that, when the first Commission ceased to exist, and as soon as existing restrictions became less energetically enforced, the disease had once more proved its tendency to spread. We understand, indeed, that an infamous clandestine

trade has since then been carried on, and that diseased cattle have been allowed to travel without any molestation whatever. For these reasons we are anxiously longing for the appointment of the Commission and the Chief Veterinary Inspector. The qualifications and acquirements of a good diagnostician, a good pathologist, and a good sanitarian, with good executive ability, will be necessary in the man who will have the duties of the office to perform, and certainly the veterinary profession is not at present overcrowded with men possessing the accomplishments required. Whoever he may be, he will, no doubt, share the sympathy and good feeling of the profession in the State and at large; good feeling, which will insure him needed assistance in his labors, and sympathy, if failure should characterize the end of his efforts, resulting from similar causes to those which have before operated.

This action of our Legislature, however tardy, must be accepted by all as a full recognition of the necessity of stamping out the disease. But if New York has been slow to act, other States have not been; for, in all directions, we hear the expression of great anxiety, in view of the possibility of the lung plague spreading among our western herds. The action of the Wyoming Cattle Association, in appointing a special veterinarian to inspect cattle for the dreaded infection; the proposition in the great State of Iowa to establish a veterinary bureau to protect her immense wealth in cattle, are all indications of the dread with which the cattle-raisers of those portions of our territory view the possibility of the appearance of the disease—a dread which is not exaggerated, and will be fully comprehended by all who are acquainted with its insidious, but not the less destructive, march. It is a fear which is too well-grounded and rational to be overlooked, when it is remembered that it needs but one animal to carry death and ruin amongst our western herds.

NOTICE.

It is with regret that we have to remind, for the last time, those of our readers whose subscription for the last year has not been paid, that the REVIEW will not be mailed to them after this number.

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ANTHRAX IN THE WEST.

We have received from one of our correspondents, papers and a letter relating to the existence of anthrax diseases under their different forms in Nebraska and Iowa. Dr. Foote, who was called to that part of the country by the Wyoming Cattle Association to inspect cattle for pleuro-pneumonia, found, when he arrived there, that anthrax was destroying herds at a great rate, mostly occurring in the apoplectic form. Attributing it to local causes, preventive measures were, at the suggestion of the doctor, instituted at once. The municipal authorities were found ready to promulgate all necessary orders to prohibit the use of milk and the utilizing of the dead carcasses. In relation to this latter point, Dr. Foote will have a great opportunity to test the value of the suggestion made recently in Europe, by M. Pasteur and Bouley, in relation to the disposition of cadavers of animals dead by anthrax, viz., that of cremation. If the origin of so-called spontaneous anthrax can be found, as it was proved by the observations of Pasteur, to be due to the carrying of the germs of the disease by earth worms, the precautions recommended will prove only temporarily beneficial, and other outbreaks may be looked for, unless the germs of contagion proper, the cadavers, are destroyed by fire. The time has gone by when the etiology of the disease could be attributed to such agents as dampness, bad feeding, marshy soil, etc.; and if the bacterias are the cause of it, if, as Pasteur suggested, anthrax is the bacteroid disease of cattle, the measures of isolation, separation of flock, change of feed, etc., will fail to secure its eradication. And again, will it be possible to do so at once—will not a long time be required? It is more than questionable? Anthrax has been prevailing in the west for years; cattle have in some cases been buried, and probably, in others, have been allowed to decompose on the surface without being placed into graves at all, and it may be assumed that the soil is saturated with germs, and sudden outbreaks may be expected at any time. Dr. Foote, in his new location, has a splendid opportunity in his hands, not only to relieve the western States of the ravages of this fearful disease, but also to test the value of new preventives and

new mode of eradication, which, after all, are the only sanitary measures to use. He may, again, by his microscopic examinations, succeed in throwing much light on doubted and unsettled points connected with the etiology of anthrax.

THE COMMISSIONER OF AGRICULTURE.

The resignation of Gen. W. LeDuc, of the position of Commissioner of Agriculture, having caused a vacancy in that office, Dr. Loring of Massachusetts has been appointed as the new Commissioner. Well acquainted with agricultural matters, and fully aware of the value of veterinary science in connection with them, we of veterinary profession may confidently look to Dr. Loring for better support and recognition for the next four years than we have enjoyed in the past. A long step has already been taken within the last few months, in the formation of a Veterinary Bureau, and every one knows the good that this has already done. We have no doubt that the new departure already inaugurated will be improved by the new Commissioner, and we feel that the day has at last come when thorough veterinary science will receive the full credit to which it is entitled. If a national Veterinary School might ever hope for a chance for permanent existence, Dr. Loring will be the man to bring it to a final realization.

MONTHLY REPORT ON CROPS AND LIVE STOCK.

We have received from the Department of Agriculture the April "Report upon the Condition of Crops and Live Stock." It occurred to us at first that by means of these monthly reports upon the diseases of animals in all the different States, a very valuable tabular arrangement of these diseases, and their exact locality, could be regularly laid before the readers of the Review, thus enabling members of the profession to obtain possession of reliable information as to the existence, locality, and extent of the various maladies affecting our stock.

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Upon a more careful reading, however, we regret to find that the information given by the many correspondents is not sufficiently definite nor accurate to be of any considerable value to our readers.

If we may be allowed to make a suggestion, we would strongly urge upon the Commissioner of Agriculture, the propriety, where practicable, of having reports from the leading veterinarians of the different States as to the nature and extent of prevailing diseases; giving special attention to enzootics or epizootics.

If this can be done, and if members of the profession will interest themselves in the matter, we fail to see any reason why these "Reports" cannot be made of much practical value. It is a step in the right direction, and the Department of Agriculture merits not only our thanks, but also our assistance.

PATHOLOGICAL PHYSIOLOGY.

CHARBON AND THE GERM THEORY OF DISEASE.

By D. E. SALMON, D.V.M.*

I.

The study of contagious diseases is to-day the most important work attracting the attention of scientific men; for not only is the loss of human life from them enormous, but the loss of property by their ravages among our live-stock, and the necessary obstruction of commerce is becoming a matter for the most serious consideration.

Until the last few years the contagious plagues of men and animals have been shrouded with the most impenetrable mystery, to be explained only as punishments sent or allowed by an angry God; and when the black plague destroyed twenty-five millions of people in Europe at a single invasion, or when it devastated such great cities as London, there were few, if any, who imagined it possible for medical science to combat these terrible scourges with any hope of success. But quarantines have already done much, and it is only in exceptional instances that the ad-

*From *The American Monthly Microscopical Journal*, April, 1881

vance of exotic pests, like cholera, yellow fever or the plague, causes any serious alarm.

Notwithstanding this, however, we have among us a number of contagious diseases, from which the country is never entirely free, which cause far greater loss of human and animal life than the majority of people ever imagine. There is small pox, now robbed of many of its terrors by a general system of vaccination; scarlatina, which is often responsible for ten per cent. of the annual deaths in entire States; diphtheria, which causes an equal mortality; typhoid and puerperal fevers, measles, whooping-cough, syphilis, pyæmia and septicæmia, all of which help to swell the mortality lists. Then as affecting animals, and communicable from them to man, there are such horrible and fatal maladies as charbon, rabies, glanders, and, overshadowing all other plagues in importance, tuberculosis. Finally, as affecting and causing immense losses among animals, we have pleuro-pneumonia (bovine), rinderpest, Texan fever, swine-plague and fowl-cholera. Not less than one-seventh of our people die from tuberculosis alone, or, in the United States, one hundred and twenty-five thousand annually; and if we add the losses from other zymotic diseases, we will double this number, and have in all a mortality approaching that caused by the late civil war.

With this introduction to indicate the importance of the most thorough knowledge of these diseases, I shall enter upon a discussion of the germ theory as applied to charbon, in the hope of keeping my readers interested by the magnitude of the subject, even if I fail to present my views in an attractive style.

Before 1876, we were totally without satisfactory evidence in regard to the nature of the virus of any zymotic disease, but Koch's investigation of charbon, published in that year, made it so clear that this malady was due to bacterium, called the *Bacillus anthracis*, that the germ or bacteria theory of contagion received a new impetus, which has done much for the elucidation of the whole question. There have always been doubters, however, particularly among English-speaking people, most of whom have been unable to follow the investigations as closely as is necessary to reach sound conclusions; and now, when Greenfield

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has shown that the twelfth cultivation of the *Bacillus anthracis* no longer produces disease, though its morphological characteristics remain the same, there is a renewed tendency to doubt the connection of this organism with the contagium. It is not uncommon to see such doubts expressed in very strong terms in medical and scientific periodicals, and, if I am not mistaken, a similar tendency has been shown even in the editorials of this *Journal*. Only a few days ago I heard a prominent medical man, in one of our large cities, offer a challenge to the believers in the germ theory, to discuss the reasons for their views in regard to any disease. It seems opportune, therefore, to present the evidences for the faith that is within us, so that all may see that we have a foundation clearly and firmly established. With this view I take up the disease known as charbon (anthrax, malignant pustule), because it has been more thoroughly investigated than any other contagious disease.

Since about the year 1850, the presence of rod-like bodies has been admitted to exist in the blood of the great majority of cases of charbon. By some they were regarded as crystals, but by others they are described as a form of bacterium, called by Davaine, *Bacteridia*, and by Cohn, *Bacillus anthracis*. Koch was the first to show that after the death of the animal, or when removed from the body before death, if surrounded by certain conditions of temperature, etc., these rods increased in length, and there were formed within them bright, refringent granules. These granules were afterwards liberated by the disintegration of the filaments, and then existed in an isolated condition. Finally the isolated granules, when placed in a fresh cultivation liquid—like the aqueous humor—sprouted and formed rods such as were originally present in the blood of the sick animal; the rods would again form filaments, and then break down into granules as before. The granules were, consequently, resting spores, while the rods were the actively vegetating condition of the organism; the former were comparatively dormant and might be likened to a grain of corn, which, as we well know, retains its vitality though exposed to great extremes of temperature, though withdrawn from the influence of the sun and air, and

even germinates after passing through the entire digestive tract of a large animal like the ox, or after having been buried in fermenting manure for a considerable time. The rods, on the other hand, show an active form of life, and may be compared to the growing maize plant, which is so easily destroyed by frost or drought, and to the existence of which the sun and air are so necessary. That is to say, a spore or seed retains its vitality, and is capable of growth and reproduction after having been exposed to conditions which would assuredly destroy the life of the growing plant or fungus. I ask the closest attention to this point, because it is from this fact that I hope to convince my readers of the connection between the *Bacillus anthracis* and the contagium of charbon. It is the line of argument originally used by Koch, and to me it seems to be a perfect demonstration.

By the cultivation of this organism on growing slides, it was found that it could not form spores unless the atmospheric air was freely admitted; it also required for this purpose a temperature above 12° (53.6° F.) If the conditions of temperature, ventilation and concentration of nourishment were such that spores could not be formed, the rods perished in a few days. Now, it is a most interesting question to know if the activity of anthrax virus disappears with the death of the rods when spores are not formed, and if it is preserved indefinitely after the formation of such spores; and this question is doubly interesting because the conditions which affect the death of the rods before spore-formation are such as will preserve unstable chemical compounds. For instance, such a chemical substance is best preserved by cold and protection from atmospheric oxygen, as well as by drying; but these conditions prevent the formation of bacillus spore, and, hence, lead to the death of the organism in a very short time.

If, therefore, the activity of fresh charbon blood (which only contains rods) is lost in a few days when exposed to a low temperature, if it is similarly lost when hermetically sealed in glass tubes, or quickly dried, especially if the loss of activity corresponds with the death of the rods as determined by microscopical observation and cultivation-experiments, we have good evidence that this activity is due to the *Bacillus*. If we can go beyond

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this and prove that, when the spores are once formed, the activity of the virus is retained indefinitely though exposed to cold, drying, putrefaction, or when hermetically sealed, then, I maintain, we have a demonstration that the *Bacillus anthracis* is the essential cause of charbon, and that the disease is due to no other agency.

The following observations are presented as deciding the question:

1. Blood and pieces of spleen, or lymphatic glands, if dried as soon as possible after the death of the animal, soon lose their activity—the smaller particles in twelve or thirty hours, and all within five weeks cultivation. When their inactivity is proved by inoculation, experiments show that the *Bacillus* has perished.

2. Such pieces of spleen, or gland, which have been dried slowly in a warm room, may retain their virulence for certainly four years. These are found to contain spores which may be cultivated and which grow into filaments that again form spores.

3. If a bottle or test-tube is filled with charbon blood, tightly corked, and placed in an incubator at 35°, it very soon has an extremely disagreeable odor of putrefaction, and within twenty-four hours the rods have disappeared, and the fluid is no longer capable of producing the disease when inoculated. This is evidently due to the absorption of the available oxygen by the septic bacteria, as may be rendered clear by the next two paragraphs.

4. If a drop of such charbon blood is placed on a slide and covered, and the cover cemented air-tight, the rods grow until the oxygen is exhausted, as shown by the spectroscope. They then remain stationary, and in a few days become granular and disintegrate without forming spores. Such blood is no longer capable of producing charbon.

5. If the charbon blood be placed in a watch-glass where there is free access of air, and then kept in an incubator at the proper temperature, the putrefaction goes on as before, and swarms of micrococci and bacteria appear. The development of the *Bacillus anthracis* is accomplished, however, as though no other organisms were present, the spores are formed and sink to the bottom, and inoculations produce disease for a long time afterward (at least twelve weeks, as shown by experiment).

6. When substances containing the *Bacillus* rods alone are somewhat diluted with distilled or well-water, the development of the rods is not stopped; but if the dilution is excessive, the organism is soon destroyed, and after thirty hours, inoculation fails to produce the disease. That is, the actively growing organism requires a certain concentration of the nutritive fluid in order to accomplish the spore-formation.

7. If flakes containing spores are taken from the watch-glass (paragraph 5 above), containing putrid but still virulent blood, and placed in a test-tube full of distilled water, the virulence is not destroyed, but is retained for weeks unchanged.

8. Such flakes may also be dried, and after a certain time moistened with water and again dried, and this repeated indefinitely without destruction of virulence.

9. A watch-glass of fresh charbon blood placed in a room at 8° (46.4° F.) remains virulent for only three days. The rods at this time have not formed spores and show the granular, disintegrating appearance which indicates their death.

Here, then, we have a series of facts which show the connection between the virulence of the blood and the presence of the *Bacillus anthracis*. A single fact of this kind might indeed be called a coincidence, but even two such facts would, from the nature of the case, afford a strong probability of the virus being identical with the organism; but when it comes to a set of nine facts, each of which taken alone would be a remarkable confirmation, it seems to me that, as scientific men, we must accept them as a demonstration. If 45° destroys the virus before spores have formed, but has no effect upon it afterwards; if diluting the virus largely with water destroys its power before spores have formed, but has no effect upon it afterwards; if hermetically-sealing destroys the virus before the spores have formed, but is without effect after such spore-formation; if putrefaction destroys the virus when there is not sufficient access of air for the formation of spores, but has no effect under opposite conditions; if, in short, the preservation of the virus for any considerable time only occurs when the conditions are such that resting-spores form in the *Bacillus* rods, then, I have no hesitation in accepting it as a fixed fact that charbon is

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caused by the *Bacillus anthracis*, and that the contagium, or virus, consists of this alone.

None of the later investigators, so far as I am aware, have published a single experiment to show that the above facts, observed by Koch,* were in any degree doubtful or unreliable; on the contrary, they have been confirmed in a remarkable manner by Cohn, Pasteur, Toussaint, Greenfield, Buchner and others.

In this article I have purposely avoided any reference to those observations which, it is asserted, conflict with the conclusion that charbon is caused by this bacterium. It is simply my object, at present, to make it clear that the organism and the virus are one and the same thing, and I believe that any unprejudiced scientific man must accept this conclusion as necessarily following from the above facts. At another time I may take up the observations which are believed by some to conflict with this view.

UPON THE VIRULENT CONDITION OF THE FŒTUS IN THE EWE,
DEAD FROM SYMPTOMATIC ANTHRAX.

BY M. M. ARLOING, CONERIN AND THOMAS.

From the experiments of Davaine, it is known that upon the female affected with Sang de Rate, the infectious agent does not reach the fœtus.

What takes place in the case where the female is affected with symptomatic anthrax? The authors have found on this point, a new difference to add to those that they have already observed between the two diseases.

Indeed, it is shown by the observations they have gathered, that the young animal is affected *in utero*, with symptomatic anthrax, with muscular infarctus, œdema, virulent blood, and microbes; in other words, with the lesions observed in adults.—*Gazette Medicale*.

* Dr. Koch, Die Aetiologie der Milzbrand-Krankheit, begründet auf die Entwicklungsgeschichte des Bacillus Anthracis. *Beitrage zur Biologie der Pflanzen*. 2nd Band, 2nd Heft. Breslau, 1876.

HOSPITAL RECORDS.

RENAL ABSCESS—FOLLOWED BY MANIFESTATIONS OF FARCY AND GLANDERS.

BY M. BUNKER, D.V.S.

March 24th, 1881, Dr. S. S. Field sent to the hospital of the American Veterinary College a black gelding, 8 years old, 15 hands 3 inches high, with the following history:

The horse had been in the possession of his present owner for several months, and during that time there had been a discharge of a purulent fluid from the inside of the left thigh, close to the inguinal region.

Otherwise, his health was good, and he had been doing his work up to the date named. The appetite and general functions were normal.

On the 26th he was thrown down and placed on his back for examination. The inferior opening of a fistulous track was found on the left side, on the inside of the thigh, slightly forward, about the point of separation of the sartorius and gracilis muscles.

A long probe was inserted into the opening, and as the track was quite large, a catheter was afterwards used in its place, and inserted to the depth of about two feet. On the hand being introduced into the rectum, and passed forward into the lumbar region, the catheter could be felt, and on being traced to its end, the track was found to end in a round, well-defined soft body, resting about on the median line. When the catheter was withdrawn, a small amount of pus came with it.

When the horse was let loose and allowed to get up, a further rectal examination was made, but no marked difference as to the general character of the tumor could be observed, except that it had moved from the median line slightly to the left, and was more dependent.

A diagnosis of abscess of the psoas muscle was made, with a very unfavorable prognosis, the means and chances of treatment being too small to justify surgical interference. Aspiration being too uncertain, incision through the flank sure to prove fatal, and a puncture with drainage tube of more than doubtful

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result, the owner decided to have nothing done to him, and the horse was removed from the hospital and lost sight of for a number of days.

On the 10th of April he was found abandoned in the street, in front of a police station, and was again kindly sent to the hospital by Dr. Fieh, who had received him from the police authorities.

The animal was admitted late in the evening, and found the next morning in the following condition:

Coat dull and staring; mucous membranes slightly injected; pulse 48, soft and weak; respiration 14; temperature 103°; was lame on the off fore leg, which was swollen up to the elbow; the lymphatics both on the inside and outside of the leg swollen; on the inside, in three or four places, are chaneroid-like ulcerations, from which a sanious discharge flows on pressure. The lymphatics of the off hind leg are swollen, with here and there small eruptions on the skin. Those of the near hind leg are also swollen and nodulated. On the neck and abdomen the lymphatic glands are more or less engorged.

The discharge from the abscess on the inside of the near hind leg is the same as when last seen. A rectal examination showed the same condition of the tumor as before. Appetite good. All the functions normal.

April 12th: Pulse 60, respiration 30, temperature 102°; about same conditions, with a slight discharge from the left nostril. The off hock was enormously swollen.

April 13th: Temperature slightly raised; otherwise in about the same condition. On the left side of the thorax, subcrepitant rales were found, with diminution of respiratory murmur on the lower part of the left lung, and slight dullness on percussion. There were a few drops of blood around the nostrils.

April 14th: Maxillary glands are swollen; ulcerations on the left side of the septum nasi. The horse was destroyed.

Post mortem.—The horse was placed on his back, and an incision made on the median line, the abdomen and thorax being both opened.

The intestines were in a normal condition. The internal

organs, when removed, were healthy. The lungs highly congested, free from glanderous deposits; heart, liver and spleen free from disease.

The right kidney was very much enlarged, somewhat congested and softened, and weighed 36 ounces.

In the left lumbar region, at the location of the left kidney, was a large elongated tumor, from the posterior portion of which extended the fistulous track.

On dissection, the tumour was found to be resting on the lumbar aponeurosis, and when separated from the surrounding tissue was found to be entirely external to the psoas muscles, but involving the left kidney in its mass. It measured in length 13 inches, and 19 in circumference.

On being placed on a table, the tumour was soft and fluctuating, and when opened allowed the escape of 13 ounces of thick pus, mixed with thick masses, all contained in a large unilocular cavity, irregular in shape. The smell of this discharge was very offensive. The cavity involved the parenchyma of the kidney, in its two posterior thirds, the organ being surrounded by a hard, thick coat of organized exudation.

There was no opening from the sac into the pelvis of the kidney. The anterior portion of the kidney was of its normal color, and terminated in a heart-shaped end.

The septum nasi presented a few ulcerative patches; the mucous membrane was rosy in color. The turbinated bone had also a few abrasions, ulcer-like in appearance.

The horse was sold at public auction, at one of the most respectable places in the city, perfectly healthy on the Friday, and found abandoned the following Sunday, because of a fear that he had farcy.

Was this an attack of acute farcy, or glanders, or a case of pyæmia, due to the absorption of the pus from the abscesses?

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CONCUSSION OF THE BRAIN, COMPLICATED WITH FRACTURE OF THE OCCIPITAL BONE.

BY R. HARRISON, D.V.S.

Late on the evening of May 13th a brown mare, eight years old, about 15½ hands high, was brought to the hospital of the American Veterinary College in the ambulance. The owner said she was being brought home from the blacksmith's shop, and, when ridden under the Elevated Railroad, became frightened by a passing train, and fell heavily on her near hip and over on her head. She struggled violently, but was not able to get up. When admitted, common sensation and voluntary motion was entirely lost, so that when pricked with the point of a knife she gave no indication of pain. Her temperature was 101½°; pulse 40, very full, and respiration 12, deep and stertorous. The pupils of both eyes were fixedly dilated and would not respond to the application of light; the left eye was nearly closed by an œdematous swelling caused by a violent bruise received near it; there was slight epistaxis from both nostrils, principally from the left; the tongue and some of the facial muscles were paralyzed; the surface of the body was covered with cold perspiration, and there were muscular tremors of the extremities; at irregular intervals she would struggle violently.

The diagnosis was made of concussion of the brain, and it was thought that a fracture probably existed at the base of the brain. A fatal prognosis was given.

Treatment.—Her rectum and bladder were emptied, a full dose of aloes given, and cold water irrigation continuously during the night was applied to the head.

May 14th, 8 A. M.—Was placed in a box-stall and confined so she would not knock herself to pieces. The temperature was 101°; pulse the same as the evening before; respiration more stertorous. Remained unconscious during the day and died during the night.

Post mortem.—The temporal region where she had been bruised by the fall was œdematous and infiltrated. At the base of the brain outside the cranial cavity was a clot of blood as big as a man's fist. The occipital bone was fractured on the left side near

the occipito speno-temporal hiatus. The cerebrum was congested and on section, the puncta vasculosa stained its substance; the membranes were intensely congested, especially at the base of the brain; the cerebellum was apparently normal.

LACERATED WOUND OF THE ANTERIOR CRURAL REGION—GANGRENE—SEPTICEMIC POISONING—DEATH.

BY THE SAME.

April 14th.—A brown mare, 12 years old, 16 hands high, belonging to a dealer in this city, had just been landed from the cars, and was being taken to the owner's stable, when she was run into by a wagon. The hub of the wheel struck her on the near hind leg and inflicted a severe lacerated wound. She was brought immediately to the college hospital, and was found to have a large lacerated wound at the anterior crural region, extending downward nine inches, parallel to the fibres of the fascia lata, and at right angles backward and slightly downward, six inches. The skin was torn away from the muscular tissue underneath, forming a V shaped flap; the muscular tissue of the fascia lata was nearly severed; about three-quarters of a pound was hanging down, almost separated from the substance of the muscle.

Treatment.—The edges of the wound were trimmed, the hanging portions of muscle amputated, the lacerated pieces of aponeurosis clipped away, the wound thoroughly cleansed and sewed up by interrupted sutures in the longitudinal wound, while the other was closed by quill sutures. Oakum saturated with carbolic solution was used as a dressing. She was then placed in a stall and confined so she could not lie down or move about.

April 15th.—The animal is off her feed, shows much pain in the injured limb and a disinclination to move, and when made to do so shows great stiffness. There was the appearance of suppuration from the wound. Strips of linen loaded with collodion were arranged so as to reinforce the interrupted sutures, the wound was cleaned and dressed with oakum saturated with alcohol, and the use of the anti-septic spray was continued at intervals during the day.

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healthier appearance, the discharge, however, was more abundant and of a very foetid odor, due to the clearing off of the wound and the sloughing of much aponeurotic tissue. The general condition of the animal was not improved, her appetite remained capricious, and the reacting fever showed itself, the temperature being $103\frac{1}{2}^{\circ}$, pulse 72 and weak, and respiration 24. The spray was used every two hours during the day and alcoholic spirits were given internally.

18th and 19th.—Temp. 104° , pulse 72, resp. 28. Eats a few carrots and a little hay. The wound was dressed as before and cold water irrigation containing chloride of calx was applied both day and night.

20th.—Eats a little better, but general condition about the same. A counter-opening was made on the anterior tibial region and a seton run through, to allow the free escape of pus and water which had infiltrated into the cellular tissue.

21st–27th.—On the 21st, another counter-opening was made six inches below the first, and seton applied.

The discharge kept on increasing and a great quantity of aponeurotic tissue sloughed away, which was removed through the counter-opening which had been made. The mare began to emaciate rapidly and would eat nothing but hay. Symptoms of organic poisoning set in and on the 27th her left lung was found to be affected with pneumonia. Her temperature was 105° , pulse 60, very weak, respiration 36. Stimulants consisting of carb. ammonia 3ij, and pulv. gerstran rad. 3i, made into a ball, were ordered every four hours. The irrigation was stopped and the parts were dressed with plain oakum dressing and a disinfecting powder.

28th.—She died on the afternoon of the 28th, and on post mortem examination lesions of pneumonia were noted in the lower third of the left lung. Both lungs were congested and showed metastatic abscesses. The entire outside of the injured extremity from the gluteal region to the hock was gangrenous and denuded of its aponeurotic envelopes. The skin on the outside of the leg was ready to slough; the external angle of the ilium was necrosed, and the attachments of the muscles were loosened.

REPORTS OF CASES.

RUPTURE OF THE STOMACH FROM IMPACTION WITH DIRT, ETC.

BY A. A. HOLCOMBE, D.V.S.

The subject of this report was a sixteen-year-old mule that had worked in a six-mule-team at Fort Leavenworth depot during the past twelve years. Of late he had become quite subject to colics, having been in the hospital for treatment some five or six times during the past nine months. The attacks were comparatively mild, and no doubt depended on an imperfect mastication of the food. Two or three doses of colic mixture were usually sufficient to effect relief.

On April 10 he suffered from a severe attack of indigestion, remaining in the hospital for three days. On the 14th he was turned into the corral for a few days' rest, but getting kicked during the day, he was not returned until the lameness had been removed, which was on the 17th. Nothing amiss was noticed with him until the morning of the 19th, when he was found in the corral suffering from intense abdominal pain. He was immediately put under treatment for indigestion, receiving an eight dram dose of Barbadoes aloes, with occasional doses of tr. of opium and aromatic spts. of ammonia. On the 20th he purged moderately, but still had slight colicky pains at infrequent intervals. About nine o'clock on the morning of the 21st severe spasms set in and death followed in a few minutes. Opportunity was not afforded for making a post mortem examination until the next morning, when the following lesions were found:

The abdomen was greatly distended with gas, which escaped, with three or four gallons of fluid, when the cavity was opened. Mixed with this fluid, at the most dependent part of the cavity, was a quantity of ingesta that had escaped from the right cul-de-sac of the stomach. When the stomach was reached, it was found distended to its utmost and unusually heavy. Removing it, and making an incision through its coats so as to expose its whole contents, they were found to consist as follows:

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containing a few grains and pieces of corn. Within this layer, in the right cul-de-sac, was a sufficient amount of corn and oats, imperfectly masticated, to completely distend that part of the organ. The left cul-de-sac was equally distended with a large mass of coarse hay, scarcely masticated at all, and a small quantity of oats and corn.

Collecting the dirt in a single heap, I estimated the weight at 25 or 30 pounds. On opening the small intestines, they were found to contain little else than very thin mud. The large intestines contained a small amount of fœces and coarse ingesta, with a considerable quantity of thin mud.

Evidently the rupture in the coats of the stomach resulted from the swelling of the oats and corn, which had been eaten in the morning, and which could not digest owing to the presence of the large mass of dirt.

FORT LEAVENWORTH, Kans., April 25, 1881.

INDURATION OF THE CERVIX UTERI.

By W. F. DERR, V.S.

On March 1st I was called by Mr. Collins of this city to see a cow that was unwell.

Arriving at his place, I found the patient in a recumbent position, very much debilitated and unable to rise, and with eversion of the vagina, which the owner thought was the head of the calf, and had a so-called cow doctor try and deliver her. I, however, informed the owner that it was the vagina. He told me the time of delivery was not up for a month yet. I tried to raise the cow, but found there was an inability for her to do so without assistance. I administered an anodyne drench, as the throes of the animal were severe, and, being weak, I wanted to save her all unnecessary pain. I reduced the vagina and applied a truss, raised the posterior extremities, and gave a laxative to be followed with tonics and stimulants.

In the evening I was called back, and found the animal down and in terrible pain. I administered an anodyne drench of chloral

hydrate $\frac{3}{4}$ ss. dissolved in a pint of water, which had the desired effect in a few minutes.

I then made a more close inquiry into the history of the case, and was told by Mrs. Collins that the time of delivery was up within a few days. I made an examination per vagina, and found the os perfectly contracted so that it was impossible for me to insert my finger. The cervix felt hard, like cartilage, and felt to me like the neck of a bottle. I applied solid extract belladonna around the cervix and waited about four hours and found the os had dilated so that, by rotatory motion, I could introduce my finger. I kept on manipulating the parts, but had no success in getting the parts to dilate. There seemed to be a perfect stricture of the cervix. I made up my mind to try the effects of warm fomentations. I introduced the nozzle of Reid's pump into the vagina, and kept up a stream of blood-warm water for five hours, but received no benefit from it only to soothe the irritated parts. I now made up my mind to operate and divide the stricture, which I did as follows: I passed a concealed bistory ten inches long into the os and made a superior and inferior incision into the cervix of about an inch and a half, then withdrew the instrument and introduced my hand, and, by gently manipulating the parts, they dilated in a short time. I ruptured the foetal membranes, and, allowing the liquor amnio to escape, found the foetus in a proper position, and, by applying gentle traction to the legs, the throes of the animal being weak, delivery was soon effected. I introduced my hand to remove the foetal membranes and found another calf, which I removed in the ordinary way. There was some hemorrhage from the incisions made in the cervix, but nothing to speak of. Both calves and cow made a good recovery.

I had another case similar to this, the animal being very poor and debilitated, on April 16th; tried the same treatment and failed, but by operating on the cervix by division of the stricture I had good success in saving the cow and calf.

N. B.—Would ask the editor if the debilitated condition these cows were in had anything to do with the cartilaginous condition of the cervix, as both cows had no trouble in parturition before. [It is not likely.—Ep.]

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REVIEW.

DISEASES OF THE OX.

By J. H. STEEL, M.R.C.V.S.

The appearance of a new work on cattle pathology, (*Diseases of the Ox*, by J. H. Steel, M.R.C.V.S.) is indicative of the rapid progress that veterinary science is making in this direction.

In America, within the recollection of some of the older members of the profession, the diseases of cattle were but imperfectly understood, and it was seldom thought necessary or economical to employ the veterinarian in treating this class of our domestic animals. All diseases of cattle were treated by the cow-doctors or cow-leeches, as they were called. Not infrequently these animals when diseased were left entirely to nature.

The present volume is timely and fills a much needed and widely felt want. The general character of the work is such as to commend it to the busy practitioner as well as to the student.

In style it is terse, vigorous and precise. The author deserves special praise for omitting lengthy discussions of disputed points, as well also as in referring his readers to works that treat of special diseases, rather than to encumber a work of this description with all the details that properly belong to separate and more or less distinct subjects.

In point of scientific exactness the work is fully abreast with the times. If there is one feature more than all others that merits particular notice it is the absence of formular receipts and prescriptions. It is indeed a *relief* to find works of this kind that have not encouraged empiricism by the insertion of numerous prescriptions.

Of the internal arrangement of the book some comment is needed. The introduction, covering almost ninety pages, occupies too much space. This has necessarily rendered subsequent parts of the work too concise. A book written expressly for the veterinary profession need scarcely be burdened by such a lengthy explanation of technicalities, already supposed to be fully understood. The section comprising bovine therapeutics and *Materia Medica* presents a convenient tabular arrangement of the more common drugs with their actions and uses.

The division of the subject matter into chapters, comprising diseases of the blood (non-specific hæmal affections, specific hæmal affections and poisons); diseases of the circulatory system; diseases of the digestive system, &c., &c., not only facilitates the study of any one particular disease, but also brings distinctly before the mind of the reader the differential characters of the various diseases affecting the same system or group of organs. "Parasites and parasitismus," is of much value to the practitioner in enabling him to recognize the most common of the parasites that infest the bovine family. The engravings very materially enhance the value of the work.

Had most of the space devoted to the introduction been utilized in giving more comprehensive descriptions of the various diseases, the work would not then be open, as it now is, to the criticism of seeming to slight some very important subjects. "Diseases of the Ox" merits a prominent place in the library of every veterinarian and veterinary student.

SPECIAL REPORT NO. 31.

Special Report No. 31 of the Department of Agriculture, being the third of Dr. C. P. Lyman on Contagious Pleuro-Pneumonia, reached us some time ago. We were in hopes that we could obtain the same in full from the Department, and thus give our readers an opportunity to read it, as we had been given to understand that we could obtain the volume. As we were going to press we received notice stating that we cannot have the reports for our own distribution, but that a copy can be had from Washington on application.

The report is made to discuss the points of inquiry relating to the investigations made by the Doctor when in England, where he had been commissioned last year for the detection of contagious pleuro-pneumonia in American cattle sent abroad; also to present the report of Dr. W. T. Whitney, the microscopist, who examined portions of diseased lungs brought home from Liverpool, and to draw reasonable deductions from the facts presented, giving first the history of the animals from which the condemned lungs were obtained. The microscopic appearances of all are carefully

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described and illustrated by several handsomely made plates, with concluding remarks from Dr. Whitney, which seem to the author of the report, and, we believe, will be conceded by all, to prove that the lungs condemned in England in the cases referred to, were *not affected with pleuro-pneumonia contagiosa*, but with chronic *interstitial pneumonia* with peribronchitis, with necrosis, and the formation of small cavities at and within the lung tissue proper, with evidences that tuberculosis played a more or less prominent part in the ætiology of these changes.

The report is quite strong in its argument, and throws much light on the question then in doubt, of the existence of the lung plague in these slaughtered American steers.

AMERICAN AGRICULTURAL ASSOCIATION.

The Journal of this Association has recently been published, as the first number, to be continued at intervals. It contains three hundred pages of excellent articles from several contributors. Amongst those most interesting to veterinarians is that of Prof. Law on the Bovine Lung Plague—a subject which the author has already written much about, but on which, however, he always finds material to treat with the hand of a master of his subject. The Journal can be had from the Secretary, M. J. Reall, 127 Water St., N. Y. Price 75 cents.

CORRESPONDENCE.

CHLORAL HYDRATE AS AN ANÆSTHETIC.

Mr. Editor:

Understanding that there are some doubts thrown upon the correctness of the views expressed and results obtained by the use of chloral hydrate as an anæsthetic in veterinary practice by our compeer, G. H. Peabody, D.V.S. of Providence, R. I., and which were given to the public for the first time through a previous issue of the *REVIEW*, I take the liberty to briefly refer to two instances in my own practice, where its use was resorted to and the results obtained. Having occasion to use the actual cautery upon an old

trotter that had passed into the twenties without any loss of his former vim and spirit, and who showed more or less symptoms of fragilitis of the osseous system, I feared the risk of a fracture of the vertebral column from casting, and therefore ordered his feed withheld, and at the expiration of thirty-six hours gave nine drachms of the crystals of chloral hydrate in capsules. In an hour afterward it was with considerable difficulty, with one man at his head and one on each side, that he could be moved a distance of twenty feet, where without restraint of any kind, the coronet of one hind foot was thoroughly fired, without any indications of pain or even so much as lifting the foot from the floor. The operation consumed about twenty-five minutes, when he was returned to his stall, and in reaching up to the rack for hay, lost his balance and would have fallen but for the three men who were supporting him. He seemed comfortable and contented, and would eat hay when placed within his reach. The pulse, taken at that time, showed thirty, with soft respiration, and increased to twenty without labor, and, except the loss of voluntary muscular action, he seemed to suffer no inconvenience. Being pressed for time, we did not wait to see how the case would terminate, but instructed the groom to keep a watch upon him until the effects of the drug had passed off. Upon calling the next day, we found him comfortable, and were informed by the groom that the intoxication began to pass off in an hour after our departure, and in one hour afterward he showed no signs of the ordeal through which he had so recently passed.

No. 2 was a valuable eighteen-months-old Alderney bull, who in fighting with another animal sustained a fracture of the inferior third of the tibia. The owner being desirous of saving him, if possible, we endeavored to apply a cast, but owing to his extreme restlessness failed to do the work satisfactorily. We accordingly administered seven drachms of chloral hydrate, and in twenty-five minutes he was stretched out, and except for his stertorous breathing, one would suppose lifeless. We succeeded in the work to our entire satisfaction. It occupied about thirty minutes. We waited another half hour, when he raised his head, looked around and began to eat some hay that lay within his

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reach. The next day he showed no ill effects from the use of the drug. We have practiced the use of chloral in a number of cases before, but not with the same degree of success. The conclusion we have arrived at is that it should always be given in large doses, upon an empty stomach, and in the equine a full hour should intervene before the animal is approached, as the excitement caused by manipulation tends to counteract its anæsthetic effect. Our experience is that the transparent crystals are preferable to the opaque cakes: both are upon the market, and one can be obtained as readily as the other.

Yours truly,

J. C. COLLIER, D.V.S.

STATE VETERINARIAN.

DETROIT, May 12th, 1881.

Editor American Veterinary Review:

SIR:—Having given some attention to a subject to which an article is devoted, under the title "State Veterinarians" in the May number of the REVIEW, I beg to offer a few remarks in relation to it. I may begin by saying that in the State of Michigan the laws in relation to the diseases of animals are of a very crude and defective character—so much so that they frequently conflict with the Constitution of the United States, and consequently are, to a certain extent, inoperative. The laws of this State on this subject have evidently been framed by men who had little if any knowledge of the evils they were intended to remove.

Having been appointed one of three State Commissioners to prevent the spread of contagious diseases among animals in Michigan, I found that I was unable to prevent the conveyance of Texan cattle into the State, though the State law prohibits this being done, between the first day of March and the first day of November. The Commissioners afterwards had a meeting at which the defective condition of the laws was discussed, and a resolution was passed by the Commissioners directing me to draw up a report which should contain drafts of a series of laws to prevent the spread of contagious diseases among animals in Michigan, as well as to prevent the sale of diseased meat and unwholesome milk.

In doing this work I have been struck with the difficulty which arises from the laws of one State being different from those of another. To accomplish all that is possible in the way of preventing the spread of contagious diseases, the laws of the different States should be alike. It is very obvious that if one State is very remiss in preventing the spread of contagious diseases, another State which pursues quite an opposite policy will suffer from the "laissez-aller" policy of its neighbor.

Can the laws of the different States be rendered alike in this respect? I rather think that the laws of the different States cannot be harmonized unless the Constitution of the United States is altered. To those who would oppose such a measure I would say that the Constitution of the United States was adapted for a small territory and three millions of people, but it must be modified when you have a population of over forty millions and an immense territory.

I do not think that a National Veterinary Department should be a mere appendage to the National Board of Health or of the Department of Agriculture. The functions which such a Department has to discharge are important enough to call for a separate organization. Such a department, however, could not be of much service until the action of the different States is harmonized, and such a change is not unlikely to meet with considerable opposition. The losses which this country must suffer by delaying to make such a change will ultimately, as it appears to me, lead to its being carried out. Yours, etc.,

A. J. MURRAY, V. S.,

State Commissioner.

N.B.—The above is sent to the *Review* under the impression that the question treated of is of considerable importance to veterinarians.—A. J. M.]

A CROSS-EYED MULE.

Editor Review:

In the government corral at this place is a team mule with double internal permanent strabismus.

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It being the first case of strabismus I have ever seen in the mule, I beg to report it for the REVIEW. Are such cases often seen? Or is the condition extremely rare?

A. A. HOLCOMBE, D.V.S.

FT. LEAVENWORTH, KANA., May 17, '81.

SUNDRIES

OLEATE OF ZINC IN ECZEMA.—Dr. Sawyer records his testimony in favor of the efficacy of the ointment of oleate of zinc in the treatment of eczema—having used the remedy for nearly six months, in a large number of cases, arising in hospital and private practice. He has always used the oleate of zinc made into an ointment, either with vaseline or lard. Vaseline is preferable to lard, because it is not so liable to changes.—*Journal of Materia Medica.*

— **TRICHINOSIS.**—M. Bouley on the occasion of the outcry against trichina has examined 600 cases of American pork, and found them free from all disease.

— **SOCIETY OF AGRICULTURAL SCIENCE.**—The annual meeting of this Society will be held at Cincinnati, on the 16th of August. It is hoped that veterinary medicine will be represented.

— **ANTHRAX IN THE WEST.**—Nebraska and Iowa are reported as suffering severe losses amongst cattle. Thousands of animals are said to have died from various forms of anthrax.

— **CATTLE DISEASE IN NEW HAMPSHIRE.**—A cattle disease is reported prevalent in the vicinity of Milford, New Hampshire, from which a number of animals have already died.

— **MORTALITY AMONGST SHEEP.**—Fully one-fourth of the sheep of Montana are said to have perished during the winter. Many owners have lost their entire flocks.

— **HORSES IN THE UNITED STATES.**—A table compiled at Washington from the latest returns, states the number of horses in the United States to be 10,998,700. In Europe there are 31,573,933.

— **DEATH FROM FRIGHT.**—In Rock Island, Ill., a horse unused to the sight of a locomotive, is said to have stopped, trembled and fallen down dead, when one of those engines came into view.

A BIG HORSE.—The Bridgeport *Standard* says that another big horse has arrived for the Barnum London Circuses. The animal is twenty-two hands high, weighs a trifle over 2,800 pounds, and is a perfect monster, being fully a foot higher than the one they have now.

— TRICHINA AT THE CHICAGO STOCK YARD.—An examination of 400 pigs, taken at random in the packing houses at the stock yard, Chicago, by Dr. Paten, failed to reveal any trichina. These results, however, are different from any previous one, and the Board of Health contents itself in advising that all pork should be well cooked.—*Medical Record*.

OBITUARY.

DR. E. HERING.

The oldest teacher of veterinary medicine, Dr. E. Hering, late Director of the Stuttgart Veterinary School, died recently at the age of 82 years, from an attack of cerebral congestion, which carried him off in four days.

Known all over Europe by his numerous and important writings, Dr. Hering was honorary member of several medical, veterinary and agricultural societies.

Amongst the numerous works which he wrote, and which are known by most veterinarians, are his *Repertorium der Thierheilkunde*, *Candall's Jahresbericht*, the classical works on special pathology and materia medica, and his *Manual of Operative Veterinary Surgery*, which was translated into the Italian and Russian languages, and lately reached its fourth edition in German.

The news of his death will be regretted by the veterinary profession all over the world.

PROF. CORBYN.

One of the oldest veterinary practitioners of Philadelphia, Prof. Corbyn, died lately at the age of 72. He practiced in that city for a period of forty years, and was connected with the Pennsylvania College of Veterinary Surgeons.

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